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A second contribution to the biology of *Ctenocolletes* bees (Hymenoptera: Apoidea: Stenotritidae)

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Abstract

Field observations of adult behaviour (particularly foraging and mating) and nests of five species of *Ctenocolletes* are presented and compared with earlier observations. All studied species are solitary and ground-nesting. Nests are unusual in lacking tumuli and those of *C. albomarginatus* and *C. nicholsoni* are remarkably deep (2.7-3.2 m).

C. fulvescens is unusual in the genus in having a summer/autumn (rather than a winter/spring) flight season and in exhibiting matinal foraging in females and a bimodal flight pattern in males.

Conjugate flight of mating pairs and territorial hovering and darting flights of males are recorded for additional species. Meloidae (Coleoptera) are confirmed as cleptoparasites in nests of *C. nicholsoni* and a *Crassifoenus* species (Hymenoptera: Gasteruptiidae) is recorded from nests or nesting areas of four *Ctenocolletes* species.

Introduction

In a previous paper (Houston 1984), I recorded the first details of the bionomics of bees in the genus *Ctenocolletes*. Nests of only one species (*C. ordensis* Michener) were described and much of the information on adult behaviour was fragmentary, providing only a very incomplete picture of the bionomics of the genus as a whole.

The observations presented here were made opportunistically during field work at various Western Australian localities in 1983-1985 and are similarly fragmentary. Nevertheless, they augment and significantly extend earlier observations. Examination of the nests of several species has revealed some significant interspecific differences and discovery of the nests of *C. albomarginatus* Michener and *C. nicholsoni* Cockerell provided the first opportunity to study the life histories of acarid mites associated with the bees. The mite-bee symbiosis will be the subject of a forthcoming paper and the present paper provides the necessary background.

The nomenclature employed here follows Houston (1985). Specimens taken as vouchers in the course of my studies are lodged in the Western Australian Museum.

In respect of brood cells, I use the terms 'proximal' to mean near the opening (or cell plug) and 'distal' to mean near the closed (blind) end.

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